

Appendix C: Unit Costs for Facility Development

The following unit cost estimates were used to prepare this plan:

Paved Asphalt Shoulders, 4-feet wide.....	\$5.00/l.f. or \$26,000/mi.
Bike Path - 10 foot asphalt, new alignment	\$21.00/l.f. or \$111,000/mi.
Bike Path - 10 foot limestone, RR corridor.....	\$4.00/l.f. or \$21,000/mi.
Striping Lanes - 4" epoxy, no lane markings	\$0.50/l.f. or \$2,700/mi
Restriping - remove existing and stripe, STH/CTH only	\$1.00/l.f. or \$5,300/mi.
New Bike Lanes - 4' each side, part of new street construction	\$10.00/l.f. or \$53,000/mi.
Signing - MUTCD Bike Route, Bike Lane and Warning Signs.....	\$100/sign(s) and post
County Directional Signs.....	\$200/sign(s) and post
Bicycle Parking - Type I lockers	\$500-\$650/bike
Bicycle Parking - Type II bike racks	\$50-\$100/bike

Assumptions are as follows:

1. 1995 dollars
2. No right-of-way or easements included, nor project design costs (typically add 10%-15% of the overall total project cost to cover design/contingency fees)
3. Paved shoulders do not include extensive grading or road widening; 3" thickness of asphalt
4. Bike path asphalt thickness of 2.5"
5. Bike lane costs include 5" asphalt over 8" base as an incidental part of street construction, lane striping, and one sign and pavement marking group per side per block (ave. block length is 660')
6. County directional signs include multiple signs per post, with custom graphics and wording

The unit costs are based on research of recent, local WisDOT-funded projects and comparison with recent unit cost estimates prepared by the Wisconsin Department of Natural Resources, Milwaukee County, Waukesha County, La Crosse Area Planning Committee, Southeastern Wisconsin Regional Planning Commission and Wisconsin Department of Transportation.

Appendix D: References

1. U.S. Department of Transportation, Federal Highway Administration. 1994. *Selecting Roadway Design Treatments to Accommodate Bicycles*. Report No. FHWA-RD-92-073. p.1-2
2. Ibid.
3. Sorton, Alex. "Street Rating and Evaluation Methodology." Course handout from Bicycle Planning and Facility Workshop. September 1993. The Traffic Institute of Northwestern University. Evanston, IL. p.5
4. Van Valkenberg, Philip. *Planning for Rural Bicycle Routes*. Van Valkenberg and Associates, Richfield, MN.
5. American Association of State Highway and Transportation Officials. 1991. *Guide for the Development of Bicycle Facilities*. Washington, DC. p.5
6. Ibid. p.11
7. USDOT, FHWA. 1994. *Selecting Roadway Design Treatments to Accommodate Bicycles*. p.16
8. Ibid. p.24
9. Wisconsin Department of Transportation, Division of Planning and Budget. September 1993. *Wisconsin Bicycle Planning Guidance: Guidelines for Metropolitan Planning Organizations and Communities in Planning and Developing Bicycle Facilities*. Madison, WI. p.39
10. Ibid. p.13
11. Van Valkenberg. *Planning for Rural Bicycle Routes*.
12. State of Wisconsin Department of Transportation. December 30, 1993. *Facilities Development Manual*, Procedure 11-45-10. Madison, WI. p.3
13. WisDOT. September 1993. *Wisconsin Bicycle Planning Guidance*. p.13
14. AASHTO. 1991. *Guide for the Development of Bicycle Facilities*. p.23
15. U.S. Department of Transportation, Federal Highway Administration. 1988. *Manual on Uniform Traffic Control Devices for Streets and Highways*. U.S. Government Printing Office, Pittsburgh, PA.
16. WisDOT. September 1993. *Bicycle Planning Guidance*. p.27
17. AASHTO. 1991. *Guide for the Development of Bicycle Facilities*. p.22
18. National Highway Traffic Safety Administration, American Automobile Association, National Safety Council. 1994. *Walk Alert: National Pedestrian Safety Program Guide*. Report No. PED-20. p.86
19. *Federal Register*, Architectural and Transportation Barriers Compliance Board. Vol. 59, No. 11, Monday, June 20, 1994. "American with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; State and Local Government Facilities." p. 31799

20. Wisconsin Department of Transportation, Division of Planning and Budget. September 1993. *Wisconsin Pedestrian Planning Guidance: Guidelines for Metropolitan Planning Organizations and Communities in Planning and Developing Pedestrian Facilities*. Madison, WI. p.5
21. USDOT, FHWA. 1988. *Manual on Uniform Traffic Control Devices*. p. 2B-6
22. Clarke, Andrew and Michael J. Dornfield. 1994. *Traffic Calming, Auto-Restricted Zones and Other Traffic Management Techniques -- Their Effects on Bicycling and Pedestrians*. U.S. Department of Transportation, Federal Highway Administration, Case Study No. 24, National Bicycling and Walking Study, Report No. FHWA-PD-93-0006.
23. Personal interview with Professor Phil Lewis, Department of Landscape Architecture, University of Wisconsin-Madison, December 1995. Mapping based upon *Jefferson County Environmental Corridors Study*, 1964.
24. USDOT, FHWA. 1988. *Manual on Uniform Traffic Control Devices for Streets and Highways*. p. 9B-9
25. USDOT, FHWA. 1994. *Selecting Roadway Design Treatments to Accommodate Bicycles*. p.16
26. Personal interview with Alex Sorton, Deputy Director of the Northwestern University Traffic Institute, Evanston, IL.
27. AASHTO. 1991. *Guide for the Development of Bicycle Facilities*. p.15
28. North Carolina Department of Transportation, Office of Bicycle and Pedestrian Transportation. January 1994. *North Carolina Bicycle Facilities Planning and Design Guidelines*. Raleigh, NC. p.93
29. Course handout from Bicycle Planning and Facility Workshop. September 1993. The Traffic Institute of Northwestern University. Evanston, IL.